

The Challenges of Standardizing Industrial Symbiosis

James Woodcock, International Synergies



Agenda

- § CWA to address the need for a definition of industrial symbiosis

- § Standardisation needs to support industrial symbiosis
 - § Standards to characterise waste
 - § Standards to facilitate reuse for technical applications

- § Next steps

The need for a consistent definition of IS

- § 2018 Amendment to the Waste Framework Directive (2008/98/EC) called for member states to promote sustainable use of resources and industrial symbiosis
- § Different definitions for IS from DGs: ENV, Grow, Regio, SG, Research
- § Different definitions from projects defined IS in different manners

- § Inconsistencies evidence the need for a consistent definition for IS

The CEN Workshop Agreement (CWA) project

- § CEN Workshop Agreement, purpose
- § 2018 collaboration between 4 European Projects
 - § SHAREBOX, EPOS, TRIS and SYMBI
- § 22 organisations involved in the development and approval process – industry-led and consensus process

The CWA on Industrial Symbiosis sets out..

- § Core elements of IS
- § Drivers for IS
- § Approaches to IS
- § IS implementation good practice

Core elements of IS

- § Industrial symbiosis is the use by one company or sector of underutilised resources broadly defined (including waste, by-products, residues, energy, water, logistics, capacity, expertise, equipment and materials) from another, with the result of keeping resources in productive use for longer.
- § Returning underutilised resources (often called waste) to productive use;
- § Information about opportunities (e.g., data on other organisations' resources, or new technologies) is required to be able to advance a synergy;
- § Business conditions incentivising industrial symbiosis, which may be through market conditions or through policies and regulations

What the CWA did not address

- § Specifics, such as standards, relating to resources
- § Aligning primary resources or practice
- § These are the responsibility of End of Waste

EoW example – pulverised fuel ash (PFA)

§ Specifies EWC codes

- § 10 01 01: bottom ash, slag and boiler dust (excluding boiler dust mentioned in 10 01 04)
- § 10 01 02: coal fly ash

§ Treatment process

§ Quality

- § Product standards and specifications
 - § IS EN numbers
- § CLP, REACH, CPR, POP

§ Compliance

§ Use and restrictions of use

EoW example - pulverised fuel ash (PFA)

§ Standards and specifications

Material	Product Standard
Pulverised Fuel Ash and Furnace Bottom Ash	IS EN 13242: Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction.
Pulverised Fuel Ash and Furnace Bottom Ash	IS EN 13055-1: Lightweight aggregates. Lightweight aggregates for concrete, mortar and grout.
Pulverised Fuel Ash and Furnace Bottom Ash	IS EN 13055-2: Lightweight aggregates. Lightweight aggregates for bituminous mixtures and surface treatments and for unbound and bound applications.
Pulverised Fuel Ash	IS EN 13043: Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas.
Pulverised Fuel Ash	IS EN 450-1: Fly ash for concrete. Definition, specifications and conformity criteria.
Pulverised Fuel Ash	IS EN 12620: Aggregates for concrete.
Pulverised Fuel Ash	BS EN 197-1: Cement. Composition, specifications and conformity criteria for common cements.

Summary

- § Clear need for guidance to facilitate IS
- § EoW process suited to clear guidance for industry
- § Need now for rapid expansion (application) of EoW to IS-suited resources



EIT RawMaterials is supported by the EIT, a body of the European Union



ISI



Thank you

James Woodcock

International Synergies Limited

WWW.RISERS-PROJECT.EU



RISERS

A Roadmap for Industrial Symbiosis Standardisation for Efficient Resource Sharing



Funded by
the European Union